TESTIMONY OF

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Washington, DC

Before the
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Washington, D.C.

QUALIFICATIONS

My name is David Hughes. Since September 1, 2006, I have been the Senior Vice President of Technology at the Recording Industry Association of America ("RIAA"). In that role, I am responsible for coordinating a variety of technology issues across the recording industry, ranging from our participation in standard setting bodies and the development of new formats and sales channels to support for RIAA's efforts in the areas of legislation, regulation, and litigation.

Prior to joining RIAA, I spent most of my career with Sony Corporation, Sony Music Entertainment, Inc. ("Sony Music") and, after its merger with BMG Music, SONY BMG MUSIC ENTERTAINMENT. I joined Sony Corporation in 1993, working at the company's corporate headquarters in Tokyo, Japan. During my tenure in Japan, I served in a variety of capacities, including in the Product Planning and New Business Development department on a number of projects and products in the digital arena. I first became involved in the digital distribution of music at Sony Corporation in September 1996, when I became responsible for developing an overall strategy for Sony's digital distribution of music.

In June 1998, I joined Sony Music at its corporate headquarters to head a newly-created department dedicated to the electronic delivery of the company's music catalog. In 2000, I was named Vice President, Technology Strategies and Electronic Music Distribution ("EMD"), and in 2002, I was named Vice President, Technology Strategies and Digital Policy. During this time, I played a key role in developing opportunities for the secure digital distribution of the company's audio and video content and was responsible for implementation of various digital rights management, copy protection and antipiracy technologies. I also represented Sony Music in a wide array of cross-industry technological initiatives, including the Moving Picture Experts Group ("MPEG"), Secure Digital Music Initiative ("SDMI"), Open Mobile Alliance ("OMA")

and Content Management License Administrator ("CMLA"). I also contributed to the specifications for new formats, including DVD-Audio and the new Blu-Ray format. I remained in this position until I left SONY BMG MUSIC ENTERTAINMENT at the end of February 2005. After leaving Sony, I performed consulting work in the music technology space for SONY BMG and others through my own firm of David Hughes and Associates.

I have made a number of patented inventions involving online distribution and marketing of recordings. A list of my patents is attached as RIAA Exhibit E-101-DP.

INTRODUCTION AND SUMMARY

Record companies are technology innovators. Through their technological innovation and other technological contributions, and related investment, cost and risk, record companies create markets for a wide array of music products and produce and distribute creative works for those markets.

This has probably always been true, even if such innovations as the long-playing record and stereo recording seem low-tech by today's standards. But it has never been more true than during the last ten years. Over the last decade, record companies have developed, implemented and invested in new technologies affecting every facet of the business.

The recording industry is in the midst of a fundamental shift away from producing and marketing a single product – physical copies of recordings (such as long-playing albums and CDs) – and toward producing music for, and distributing music through, every kind of distribution channel and technology platform imaginable. This transformation is exciting. Today, technology permits us to acquire and listen to songs in ways never before imagined. Who would have thought, even 25 years ago, that people would be downloading directly to and listening to music through a telephone they carry in their pocket? Consumers have never before

enjoyed such easy, varied, and ubiquitous access to such a broad range of music. And artists have never before had so many ways to connect with their audience.

This transition has not happened automatically. It has been made possible by technological innovation in which record companies and technology companies have, in a very real sense, partnered – each developing new technologies that work together and that, collectively, are essential to the opening of new digital markets. Such technological innovation is costly, and the record companies have invested many millions of dollars in developing the technologies that form the underpinnings of the new digital marketplace.

By contrast, the process of writing songs, licensing songs, and accounting for the resulting income from these efforts, has remained largely the same. Music publishers and their licensing agents, such as The Harry Fox Agency ("HFA"), certainly have made technological improvements in their operations, such as receiving license requests and issuing licenses over the Internet. However, that is merely taking advantage of modern technology to carry out a traditional business efficiently. It is the record companies, not the music publishers, who have invested and continue to invest in development of new technologies, new distribution channels, new products and new business models. Within the music industry, the role of technological innovator has fallen uniquely on the record companies, and they have risen admirably to the task.

In this testimony, I will do two things. First, I will demonstrate some of the new ways in which music is available today – those that do not result in compensation to rights holders as well as the fruits of technology innovation by record companies and their technology partners that result in payments to songwriters and music publishers. Second, I will describe some of the kinds of technological innovations and investments that record companies have made and are making with respect to every aspect of the production and distribution of recorded music:

- Development of new product and service offerings
- Contribution to basic technologies on which digital delivery of music depends
- Development and implementation of technology necessary to produce, manage, promote, distribute and account for distribution of the myriad creative products made possible by technology
- Development and implementation of the technology necessary to fight piracy

In my testimony, I draw primarily from my experience at Sony Music, but also my participation in various industry-wide initiatives and my work with the heads of technology at the RIAA's member companies.

It should be clear by the conclusion of my testimony that record companies are essential technological innovators that have made massive investments to maximize the availability of music to the public through their technological contributions. It also should be clear that while these innovations and investments have benefited everyone in the music industry, including songwriters and publishers, songwriters and publishers have played no similar role.

I understand that the factors the Copyright Royalty Judges must consider in setting rates include the parties' relative creative and technological contributions and investments, costs and risks, and maximizing the availability of creative works to the public. The record companies' creative contribution to the design of new kinds of offerings, technological contribution to making those offerings a reality, and related investments, costs and risks are increasing the availability of creative works and opening new markets and media. They are also creating new opportunities for the entire industry, including writers and publishers. The mechanical royalty rates determined by this panel should reflect these contributions and investments.

The royalty rates and terms determined in this proceeding also should reflect the diversity of the product and service offerings I will demonstrate and describe, and the countless others that we are likely to see in the future. In short, the Judges should determine a rate structure that will permit record companies and their technology partners to continue to innovate, thereby maximizing the means to distribute music to consumers.

DISCUSSION

I. Demonstration

To illustrate some of the ways in which music is available today, I have recorded a demonstration, which is attached as RIAA Exhibit E-102-DP.

After providing a brief background about how music is played on a computer, I demonstrate the serious challenge we are up against – how easy it is for consumers to obtain and redistribute music in ways that result in no compensation to rightsholders. In today's marketplace, we are forced to compete with pirates who offer our music for free, and do not have our costs of creating and promoting the music, our costs of paying artists and publishers, or our need to implement systems for protecting content, collecting payment and accounting for royalties. The challenge of trying to compete with free music is a strong motivation for our innovation.

I then turn to the results of innovation by record companies and their technology partners to inform the Judges of some of the new kinds of products and services available in the marketplace today. These include:

- **Permanent Downloads to the User's Computer** – A recording that is purchased over the Internet from an online music service is transmitted from the service's computer system (referred to as a "server") to the user's computer, on which it is permanently stored.

- **Subscription Services** – A service for which users pay a set subscription fee, typically a monthly fee, that allows them access to music in various ways, typically including permanent downloads; "limited," "conditional," or "tethered" downloads, which allow the user to play the music only for so long as the subscriber's subscription continues; and "on-demand streams," where music is transmitted to the user on demand for listening in real time.
- **Mastertone Downloads** – An excerpt of a commercially-released recording (or in rare instances some other short musical recording) is transmitted to the user's phone over the cellular telephone network and used to alert the user to an incoming call.
- **Mobile Downloads** –A recording of a full song is transmitted to the user's phone over the cellular telephone network.
- **New Physical Products** – Optical disc products in formats such as DVD-Audio, DualDisc and SACD that include music in different formats – typically high fidelity stereo and surround sound for an enhanced listening experience – and in the case of some formats, may also contain bonus content such as music videos, "making of" documentaries, artist interviews, photographs and concert footage.

The particular examples I chose to demonstrate are just a few examples of the ways that innovation by record companies and their technology partners gives consumers access to music in new and exciting ways.

II. Record Company Technology Innovation

Record companies have been at the forefront of creating and implementing the technologies I have just demonstrated and others. During the last decade, record companies have developed, implemented, and invested in new technologies affecting every facet of the business.

My career in the music industry is part of that transformation. By 1998, Sony Music recognized that the industry was moving to electronic distribution and away from physical products such as CDs, and hired me to start the EMD department. Our mission was to develop all the technological infrastructure and business processes and prepare all the recordings necessary to enable online music distribution. We quickly moved to do that, and started selling digital music online as far back as 1998, before the rapid rise of Internet music piracy through services like the original, illegal version of Napster. Similar infrastructure and business processes were developed and implemented at every other major record company.

In this section of my testimony, I will describe how those efforts have affected, and continue to affect, every aspect of the recorded music business. These very important technological contributions led to technologies that are fundamental to today's music business and have helped enable new markets for electronic distribution of music.

A. New Product and Service Offerings

You have seen in the demonstration in RIAA Exhibit E-102-DP a few examples of new kinds of product and service offerings that are in the marketplace today. There are others in the marketplace or in the works, and record companies and their technology partners are discussing new ones every day.

Nobody in the music industry makes money unless consumers are willing to buy music. Selling music requires more than great music; it requires delivering that music in ways that create real value for the consumer. Increasingly, that means ways that are fresh, exciting, instantly make virtually any recording available, and offer a good value even taking into account options like stealing the music using a peer-to-peer service. The desire to develop such consumer value-oriented delivery platforms is driving record companies and their technology

partners to offer or consider a variety of new kinds of product and service offerings beyond those I demonstrated, including:

- Preloaded locked content, such as recordings that come preloaded on a cell phone memory card or other non-traditional medium, secured by a "digital rights management" ("DRM") system so they are inaccessible until access is purchased for an additional fee. (Some years ago at Sony Music, we evaluated a technology called DataPlay that would have included locked content, but we ultimately did not pursue it, in part because of the challenge of mechanical licensing. With a mechanical royalty rate structure that enables distribution of locked content, the time may be right for this kind of offering.)
- Kiosks in retail stores that can create CDs to order, so that a wide selection of physical products can be available to the public in retail stores even as the shelf space devoted to music continues to shrink.
- Peer-to-peer services that check the associated textual metadata or "acoustic fingerprints" of files being traded, block infringing distribution, and provide a mechanism of payment for authorized distribution.
- Artist websites operated by record companies that promote the artist and his or her recordings but may also sell recordings and other related products.
- "Dual delivery," where as part of a single transaction, a user can purchase downloads that are delivered to two of the user's computers, or to the user's cell phone and computer.

- The opportunity to purchase a physical product from an online music retailer for delivery by mail, and have the instant gratification of getting a download or other access to the music over the Internet in the interim.
- Bundles of different kinds of products – perhaps including audio tracks, a music video and a ringtone, or a physical product that can be used as the key to obtain downloads of bonus tracks – to encourage users to buy more music by giving them something extra that they cannot get through other means, such as a peer-to-peer service.
- Delivery in other forms and to other platforms, and delivery of other types of musical content, some covered by Section 115 and some not, including video streaming and downloads, and user-generated video content.

These kinds of offerings are not becoming available by themselves, or solely through the efforts of technology companies. In fact, every major record company devotes substantial staff resources to developing new technologies, products, and services, typically in partnership with technology companies, including digital music service providers; developing the technology platforms and business processes necessary to implement them; and supporting the labels within the record company to produce content in the proper format. The major record companies have hundreds of people responsible for developing new digital products and services. In addition to these dedicated technology development groups, record companies' existing information technology and accounting staff, as well as staff inside each of the record companies' labels, have also devoted more time, energy, and human resources to developing the infrastructure needed to service the new digital music industry. Music publishers, by contrast, do not invest to anywhere near the same degree in the creation of new types of product and service offerings, and generally have been reactive, rather than proactive, to new technology development.

B. Record Company Investments in New Offerings

The effort required to launch a new type of product or service varies, as does the amount of creative and operational effort required to keep a service supplied with fresh new content. The effort involves not only creative contribution – both technological and artistic – but also development of business models, financial and legal analysis, clearance and marketing. But one result of the proliferation of new technologies and formats is clear: Where record companies used to produce basically one product – physical albums – they now may produce dozens, or sometimes hundreds, of distinct products associated with an album, including individual tracks in different formats, various mastertones in different lengths and formats, electronic "wallpaper," a "making of" documentary, and downloadable cover art and liner notes. In the case of new physical products, they now may produce and need to clear a variety of bonus content beyond the basic audio tracks. Producing all this content, at a high level of quality, is expensive and increases pressure on already tight production budgets.

Further, the investment made by record companies in new products and services is risky. Record companies are the venture capitalists of the music industry. It is an accepted truism in the recording industry that for approximately every 20 new artists, only one will result in profitable sales. Another two are likely to more or less break even and the remainder can be expected to lose money, which has to be covered by profits from the one "hit." This ratio is much the same as those often quoted by Silicon Valley venture capitalists, and the two are often compared. Record companies invest in new technologies just as they invest in artists and venture capitalists invest in companies, knowing that for every product concept that succeeds, many fail.

The recent successes and failures of new music products highlight the unpredictability of the music market. For example, the download business is growing rapidly. Yet online subscription services have been available in the marketplace for about five years, and while

many of us think they are still very promising, such services have made only modest inroads to date. Some of the new physical formats, such as DVD-Audio, DualDisc and SACD have much to offer to those consumers who prefer to obtain their music in a physical format, but all of them have suffered lackluster sales. Record companies invested in other formats such as CD Extra, Enhanced CD, Connected CD, Digital Compact Cassette, and Minidisc, that even when successfully launched into the marketplace never found much traction.

It simply is not possible to predict with certainty at the outset which technologies will ultimately prove both workable and popular. Record companies make the best business judgments they can and then start a process of investing, experimenting, developing and testing. But if record companies do not invest in trying to identify, develop, and promote the next exciting technology, the whole music industry eventually will wither and die. Moreover, even when a record company is successful in launching a new product, the record company cannot rest on its laurels. Rapidly changing technology and a dynamic marketplace require record companies to continually invest in developing new types of product and service offerings.

The royalty rates and terms determined in this proceeding should reflect the unique contributions, investment, cost and risk of record companies, and be sufficiently flexible to enable mechanical licensing of the full range of products in the marketplace and others that are likely to result from record company technological innovation aimed at providing compelling music distribution models to consumers.

C. Basic Technologies

The recording industry has also made substantial contributions to many of the technologies that underlie specific product and service offerings. For example:

- **Codecs.** A digital sound recording file is naturally very large – something like ten megabytes of data per minute of CD-quality music. To speed up the transmission of

these files and make it more practicable to store them – particularly on devices such as iPods, other portable music players (such as the so-called MP3 players), and cell phones – the files are "compressed" (*i.e.*, made smaller). The software or hardware that does this uses a mathematical algorithm called a "codec" (short for "COmpression/DECompression"). MP3 is a well-known codec. Record companies have been deeply involved in all of the major audio codecs. For example, Sony Music and Sony Music Studios cooperated extensively when Sony Corporation developed its own codec, called "ATRAC." In addition, Sony Music, along with other record companies, participated in developing the standard for "MPEG Surround," another widely used codec. The record industry's participation in the process of setting codec standards has led to codecs that provided quality sound output acceptable to music producers, artists, and consumers. When MPEG was attempting to design a specification that would allow the digital distribution of surround sound over normal stereo channels, the recording industry was instrumental in the refinement and ultimate adoption of specifications that would ensure delivery of the original sound mix approved by the recording artist.

- **DualDisc.** Record companies developed the DualDisc format, using existing and newly-developed technology. A DualDisc has both a CD side and a DVD side, allowing artists to create in exciting new ways using audio, video and computer content – all on a single two-sided disc. RIAA has implemented programs to license the DualDisc logo to content producers, provide information about the format to consumers, and certify DualDisc manufacturers.

- **DRM Systems.** Record companies have been leading proponents of DRM systems (*i.e.*, systems that use encryption technology and special software to ensure that music is used only in accordance with "usage rules" prescribed by the applicable rights holder). From the days DRM systems first became widely available for entertainment media distribution, record companies have worked to ensure that they effectively protect our content and enable the business models we are exploring. Toward that end, record companies worked with DRM software and hardware providers to implement a wide variety of functionalities, such as the capability to report back the number of plays of protected recordings and a "secure clock" so that users could not circumvent the capability of not renewing access to recordings after a certain amount of time. These capabilities are fundamental, especially to the operation of today's music subscription services.
- **DRM Interoperability.** Record companies have been concerned that incompatible DRM systems are leading to consumer confusion in the online marketplace. To resolve that, the major record companies participate actively in initiatives such as the Coral Consortium and the Digital Living Network Alliance ("DLNA"), both cross-industry groups that have the goal of creating a common technology framework for content, device, and service providers to enable a simple and consistent digital entertainment experience for consumers.
- **GRid.** Historically, every sound recording was assigned a unique International Standard Recording Code, or "ISRC." Record companies recognized that the ISRC system was no longer adequate in the digital music marketplace, because a single sound recording could be exploited in a variety of digital products, as I previously

demonstrated and described. As a result, the recording industry initiated and championed the development and international standardization of the Global Release Identifier or "GRid" system, to uniquely identify different digital products that are based on the same sound recordings. This system, which is being widely implemented, allows everyone in the industry to unambiguously distinguish between different digital products for purposes such as content delivery, licensing and accounting.

- **Other Standard Setting.** Record companies have played a critical role in the effort to define and develop a range of technical specifications for digital distribution technologies through their leadership in various domestic and international standard setting bodies. As I indicated, I represented Sony Music in such cross-industry technological initiatives as MPEG, SDMI, OMA and CMLA. Record companies formed SDMI specifically to engage technology companies in setting standards necessary to enable legitimate digital markets. Other record companies participate in the CTIA Wireless Internet Caucus ("WIC"). I understand that representatives of the publishing community participate with record companies in some standard-setting activities, such as the Digital Data Exchange ("DDEX"), but that limited activity seems to be about the extent of their technological contribution in this area and does not come close to meeting the record industry's commitment and contribution.
- **Downloading Platform Technology.** In the late 1990s, the major record companies teamed with IBM in the "Madison Project." This was a major initiative to implement and consumer test an open technology architecture called the "Electronic Media Management System," all before the illegal peer-to-peer file sharing service Napster

burst onto the music scene. Hundreds of households in selected cities had the opportunity to purchase music in their homes over the Internet and burn them to CDs. The participants in the Madison Project were generally satisfied with their experience, although IBM's solution ultimately did not emerge as a significant platform for delivering downloads. Nevertheless, it was at this time that the record companies implemented the first versions of the infrastructure for digital delivery described below, and these were essential components that enabled the record companies to successfully nurture and grow the digital music marketplace.

These are just some of the ways the recording industry routinely plays a leadership role in ensuring that the tools are available to make high-quality digital music available to consumers through a wide variety of specific product and service offerings.

D. Infrastructure

It is a common fallacy that record companies have no distribution chain or distribution costs for electronic delivery. To the contrary, the proliferation of new products, services and business models that has been made possible by new technologies has presented perhaps the biggest production, logistical and administrative challenge the recording industry has ever confronted. The key to facing that challenge has itself been technological. The major record companies have spent many millions of dollars each to build new technological infrastructure and business processes to produce, manage, promote, distribute, and account for the distribution of new products:

- **Digital Asset Management Systems**. Perhaps the largest technological contribution record companies have made in this area has been the creation of Digital Asset Management Systems ("DAMS"). To distribute music electronically, one of the first tasks record companies had to undertake was to digitize and store their music. DAMS

are combinations of software and a network infrastructure that store the dozens or hundreds of sound recording products that may be associated with an album, as well as associated "metadata" (see below). DAMS then synthesize the songs and their associated metadata into specific deliverables desired by online music distributors. DAMS are connected to the Internet, and make these deliverables available to digital distributors in accordance with agreed-upon specifications. Record companies have spent tens of millions of dollars developing their DAMS, without which it would be impossible to manage, prepare, distribute and track usage of digital music products.

- **Metadata.** Metadata is the term we use to refer to information such as artist and title identifying information, Global Release Identifier or "GRid," genre classification, explicit lyrics or other version designation, cover art, liner notes, song lyrics, recording session information needed for union pension obligations, details on copyright owners and other royalty participants, credit information for both the sound recordings and underlying composition copyrights, and clearance information (*e.g.*, an indication of the formats in which a particular recording can be distributed). Record companies need to provide metadata to services in electronic format, so it can be distributed along with the relevant recording. As the amount of metadata demanded by the marketplace continues to grow, collecting, digitizing and curating it for past and current releases becomes an ever bigger and more expensive business process. Creating metadata is not a one-time expense; metadata constantly changes, due to reallocations of rights and changes in copyright administrators. Record companies must therefore constantly update their metadata to account for these changes.

- **Remastering Catalog Recordings**. To feed services' insatiable appetite for music, DAMS need to be loaded with digitized content. However, historically, sound recordings were made on analog magnetic tapes. To make high-quality digital recordings from their catalogs available online, record companies have had to convert hundreds of thousands of such tapes into digital format, a laborious process that must be performed by qualified sound engineers. Due to the degradation in audio fidelity that naturally and unavoidably occurs over time with analog tapes, record companies have had to develop a number of innovative technical solutions, such as heat treating tapes to allow the digitization process to proceed. While this "remastering" process first started with the introduction of the CD in the 1980s, the process has been active well into the current millennium. And the process of delivering digitized recordings never ends. Because codecs constantly change and improve, even though we deliver our whole catalog to a service in one format, within a short time we may have to re-deliver the entire catalog in a new format.
- **Digital Data Interchange with Services.** A major record company might have distribution arrangements with hundreds of digital distribution services. Most of these services do not rely on ripping CDs to get the recordings. Through their DAMS, record companies make available the proper selection of digital recordings in accordance with agreed-upon technical specifications, together with the associated metadata, and transmit it to music service providers. Implementation of such delivery requires integration of the computer systems operated by the record company and the services. Record companies also receive data back from the services about how often

particular songs have been played, to help determine the proper royalty payments to the artists, publishers, and other rights holders.

- **Direct Distribution.** Record companies not only make their recordings available to the public through third-party services, they also distribute recordings directly through their own websites and artist websites they operate. I headed Sony Music's initial efforts to sell content over the web beginning in 1998. Record companies made significant investments, beginning at the end of the 1990s, to create new, innovative websites to attract customers to their content online. Our goal was to "prime the pump" of the emerging digital music market at a time when consumers had few options for obtaining music online. Record companies have not become major retailers of online content, but they continue to maintain an online presence to promote their artists and ensure that consumers interested in one of their artists have a convenient opportunity to purchase that artist's recordings. Today, if you visit SONY BMG's website at www.sonymusic.com or many of its artist websites, you can download music, videos, and other products.
- **Administrative Infrastructure.** As part of the transition to electronic distribution, record companies have invested heavily in technological innovation relating to the "back-end" systems that allow for the tracking and payment of royalties and other payments to artists, producers, publishers, licensors of recordings, musicians' unions, and others who have a financial interest in the relevant income streams. Record companies have used computers for royalty accounting for decades, but royalty accounting systems historically were based primarily on the unit sale concept (*i.e.*, royalties were calculated based on the number of physical units sold). Properly

accounting for the wide range of new products, services and business models made possible by new technologies requires complex accounting systems with the flexibility and adaptability necessary to calculate royalties and participations from new revenue streams that are not susceptible to the traditional unit-based approach. Development of these systems has taken years and cost tens of millions of dollars. Moreover, electronic accounting involves substantial recurring expenses. For example, record companies must constantly custom-tailor reporting formats. Record companies also have developed highly sophisticated electronic contract management systems to facilitate management of agreements both upstream and downstream.

Although this digital distribution infrastructure lacks much of the glamour sometimes associated with the music business, it is truly powering the industry. Without the expertise of the dedicated technologists responsible for these systems, it would be virtually impossible to produce, manage, promote, distribute and account for distribution of new products. And while publishers also have royalty accounting systems, they have not had to invest in other aspects of digital infrastructure, and their basic business model of issuing mechanical licenses and processing royalty statements has not changed in a way that would necessitate the sophisticated accounting systems that record companies have had to implement.

E. Technology to Fight Piracy

Finally, I demonstrated just how easy it is to illegitimately copy and acquire music, and rapidly distribute that music to a large population of people that might otherwise have paid for it. A fundamental problem of today's music marketplace is that many people will not purchase music that they can easily get for free. Technology probably cannot totally thwart the determined pirate, but it is still an important component in the antipiracy fight. As such, in addition to their huge investment in the technology necessary to make music available through

legitimate channels in a way consumers will buy it, record companies also have invested in antipiracy technology. This has included activities such as "fingerprinting" and/or copy protecting pre-release CDs, implementing "spoofing" measures to make it more difficult for users to locate infringing copies on peer-to-peer services, and developing systems to police the Internet for infringing music distribution.

The record companies' anti-piracy efforts protect musical work copyrights as well as those in sound recordings, and are helping to create a new stream of online sales income for writers and publishers, but publishers do not contribute to these efforts in the same manner or to nearly the same extent.

CONCLUSION

This is an exciting time to be a part of the music industry. The innovations in music delivery that I demonstrated or mentioned earlier are revolutionizing the way consumers obtain and listen to music. Record companies and their technology partners have been responsible for the technological innovation that is making this revolution possible, and I am proud to have been a part of that process at Sony Music and now at RIAA.

Moreover, I think it is likely that the pace of technological innovation will quicken in the future, so we are only just beginning to see the range of products and services that might be in the marketplace five years from now when even greater broadband penetration and ubiquitous wireless data networks really will make it possible to give consumers music any way they want any time they want.

These circumstances have important consequences for this proceeding. First, the royalty rates and terms determined in this proceeding should reflect the substantial creative and technological contributions, investment, cost and risk of record companies – which is vastly disproportionate to that of publishers and substantially benefits publishers. Second, the royalty

rates and terms determined in this proceeding should reflect that there is no longer one or a very narrow range of similar products in the marketplace. The number of different types of product and service offerings subject to compulsory licensing is multiplying, and will probably continue to do so. We need a rate structure that will permit record companies and their technology partners to continue to innovate.

I declare, under penalty of perjury, that the foregoing testimony is true and correct to the best of my knowledge.

David Hughes

Date: Nov 27, 2006

Exhibits Sponsored by David Hughes (Public)

Exhibit Number	Description
E-101-DP	List of Patents Invented or Co-Invented by David Hughes
E-102-DP	Video Demonstration of Music Technologies by David Hughes (on CD)